WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005NV78B

Title: Wash Load and Fractional Suspended Load Transport in Lake Tahoe Tributaries

Project Type: Research

Focus Categories: Sediments, Surface Water, Non Point Pollution

Keywords: Sediment Transport

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $25,044

Non-Federal Matching Funds: $53,610

Congressional District: Nevada 02

Principal Investigator:
Guohong Jennifer Duan

Abstract

Silt and clay sediment particles having diameters of less than 62 µm and associated contaminants are the cause of declining clarity in Lake Tahoe. These fine particles require minimal energy for suspension and can carry large amounts of pollutants. These particles are transported as wash load and suspended load with surface runoff and stream flow and finally reach the Lake. The U.S. Geological Survey (USGS) has monitored suspended sediment in 18 tributaries at the Lake Tahoe Interagency Monitoring Program (LTIMP) sites since 1988 (Rowe et al. 2002). Concentrations of suspended sediment have been measured, but size gradations have not been determined. In order to accurately determine the sediment load that is causing turbidity in the Lake, it is necessary to separate the fine-sized silt and clay sediment from the measured suspended load. Therefore, we propose to conduct a two-year project to quantify the transport of wash load and fine suspended load carried in the tributaries discharging to Lake Tahoe. Suspended sediment will be sampled at the LTIMP sites, and analyzed at DRI soil laboratory. Bed and bank material will also be sampled at the study sites to determine silt and clay content. Empirical relations will be formulated by using the measured data for predicting fine sediment yields. The results of this project can be applied to quantify fine-sized sediment and its associated pollutant load delivered to the Lake from the tributaries. The results of this study will also guide environmental managers to prioritize BMP (best

management practice) projects to mitigate sediment in the Lake. Additionally, specific topics in his research will lead a graduate student from the Hydrologic Science Program at the University of Nevada, Reno to complete a thesis.